Show-Me Connection

An Additional Study On The Relationship between School Library Media Center Services and Student Achievement

Prepared by:

Jamie Miller
Jinchang Wang, Ph.D.
Lisa Whitacre, M.S.

Prepared for:
Missouri Department of Elementary and Secondary Education
Missouri State Library

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Introduction

In 2002, the Department of Elementary and Secondary Education and the Missouri State Library contracted for a study to measure the impact of School Library Media Center Services on Missouri schools' student achievement, specifically on MAP scores. The study was conducted by a team of Missouri researchers from Quantitative Resources (now RQ Squared). This team committed to researching the following hypotheses:

- schools with Library Media Centers and Services display a positive relationship to student achievement measured using the Weighted Average Map Index.
- certain components of School Library Media Centers and Services have more of a relationship to the Weighted Average MAP Index than others.
- although demographic characteristics have a high relationship to the Weighted Average MAP Index, they do not eliminate the positive relationships from the above two hypotheses.

Due to the strong significant relationship discovered in the above hypotheses, there was an immediate desire to have further analysis and study in the components that had the strongest relationship to student achievement: library usage, summer reading and library access. Immediate questioning addressed such things as, what components of library usage cause the relationship to student achievement to be affected, what type of a summer reading program is most effective when attempting to impact student achievement, and what does access mean? To answer these questions and others, additional research and analysis was conducted in late 2003 to determine the impact that "direct" contact has and how that contact can be translated into "action-oriented" steps that school libraries and districts can take to impact student achievement.

This report summarizes the initial study's findings (the entire study can be found at http://dese.mo.gov/divimprove/curriculum/lmcindex.htm) and reports the findings from the additional study.

Executive Summary

The initial study determined that School Library Media Center Services have an effect on student achievement and more specifically that the direct contact components of the library - such as usage, summer reading programs, and access, have the most significant impact on student achievement.

When other conditions were taken into account, the development of School Library Media Center Services alone accounted for up to 11% of the variation in the Weighted Average Missouri MAP index. Generally, its importance fell below that of demographic differences, which consistently demonstrated stronger affects at about 40% of the variation in the Weighted Average Map Index.

The additional research determined that within each of the direct contact School Library Media Services Components, there are specific items, which if done, will impact those components and ultimately impact student achievement.

Although it was outside the scope of this set of research, discovering the remaining 49% of variance is certainly possible. Since this project's goal was to identify a relationship to School Library Media Center Services, and measure that relationship; the remaining 49% of the variance of student achievement, was not determined. However, items such as curriculum, GPA, or test administration techniques could explain that remaining variance.

School & Community Differences

The impact of the development of School Library Media Center Services on student achievement is not negated by:

School differences, including:

- Free and reduced lunch rate,
- Percentage of African American; or
- Teacher education/certification.

Community differences, including:

- Percent of poverty,
- Median household income; or
- Educational attainment.

School Library Media Center Services

The following characteristics of School Library Media Center Services should be the focus of a school district or building that has a desire to impact student achievement:

- Library Usage
- Summer Reading Program
- Library Access

Library Usage

Library Usage and its positive relationship to student achievement can best be achieved by:

- Ensuring that school librarians have clerical help.
- Providing many varieties of print and online resources.

Summer Reading Program

Cooperation with a local public library to provide a Summer Reading Program has a significant impact on the relationship between a summer reading program and student achievement. Summer reading programs encourage an interest in reading, the act of reading, and lessen the impact of no formal education for three months.

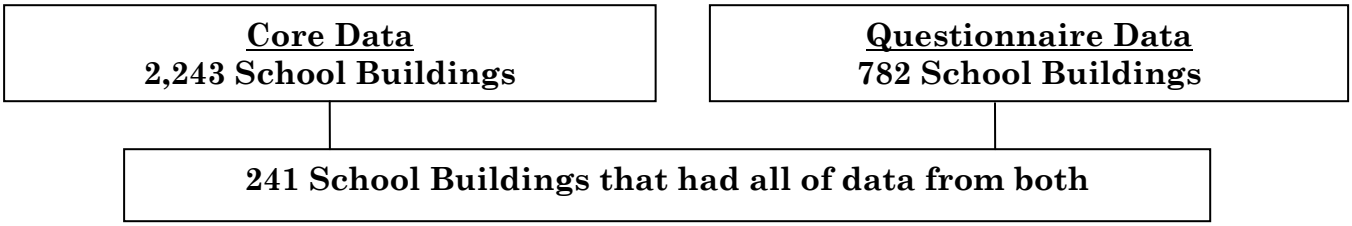
Library Access

The more hours the library media center is open and staffed, the more it will have a positive impact on student achievement. In addition, districts that have a library/media coordinator tend to have better access and impact student achievement.

Methodologies

Data

The sample data was created by comparing the schools that had complete core data and those who had completed the librarian questionnaire. These findings are displayed below.



The sample data was complete for 241 of the school libraries (all core data used and questionnaire responses available) for the variables of the 11 components included in the final analysis. Although, more than 241 complete cases were desired, especially after 782 school buildings completed the questionnaire, the 241 cases still allow the analysis to be statistically valid and reliable at a 95% confidence interval at plus or minus six percent.

Available Core Data

The Department provided a vast amount of school building level data, known as "core data." The following list of what served as an integral part of the analysis of the effect of School Library Media Center Services on student achievement.

- Student Data
- Teacher/Administrator Data
- Librarian Data
- Library Media Data
- Census of Technology

Questionnaire

The questionnaire of School Library Media Center Services focused on several areas that could have an impact on student achievement. The 47 questions asked were chosen because of one or more of three reasons: the data was not included in the core data, other State school library assessments asked similar questions so they were needed for comparison purposes, and/or the data was not available from other sources. The list below displays the categories of questions on the questionnaire.

- Respondent Information
- Library Management
- Library Staff
- Service Hours
- Staff Activities
- Library / Loan Use
- Library Technology
- Library Collection

Statistical Analysis

The statistical analyses included identifying the connections between School Library Media Center Services and student achievement in the sample data, and determining the 'significance levels' that indicate the extent to which the sample data represents the entire Missouri School Library population.

The following topics describe the types of analyses completed.

Hypothesis Testing

Hypothesis testing was performed to determine if the null hypothesis could be rejected assuming that the Weighted Average MAP index was not related to School Library Media Center Service variables.

Relationship Testing

1. **Bivariate Correlation**
   Bivariate correlation reveals how two variables are statistically related, with the assumption that other variables do not exist. Negative values indicate that a decline in one variable is associated with an increase in another, while positive values indicate that two variables increase or decrease together.

2. **Multiple Regressions**
   Multiple regressions were used in the project to test the correlation between a dependent variable Y (Weighted Average MAP index) and any set of variables.

3. **Partial Correlation**
   Partial correlation reveals the correlation between variables when holding some other variables constant. Partial correlation helps single out the effect of the interested variables. The incremental partial correlation method was chosen for the analyses in this project since it could provide more accurate statistics.

Data Aggregation

Once the questionnaire and core data was collected, cleaned, and aggregated, 11 key components of School Library Media Center Services were identified:

1. Librarian Qualifications
2. Library Access
3. Library Budget
4. Library Space
5. Library Staff Activities
6. Library Usage
7. Library Management
8. Library Media Center Holdings
9. Library Staffing
10. Summer Reading Program
11. Technology

The following table describes each component and its source.

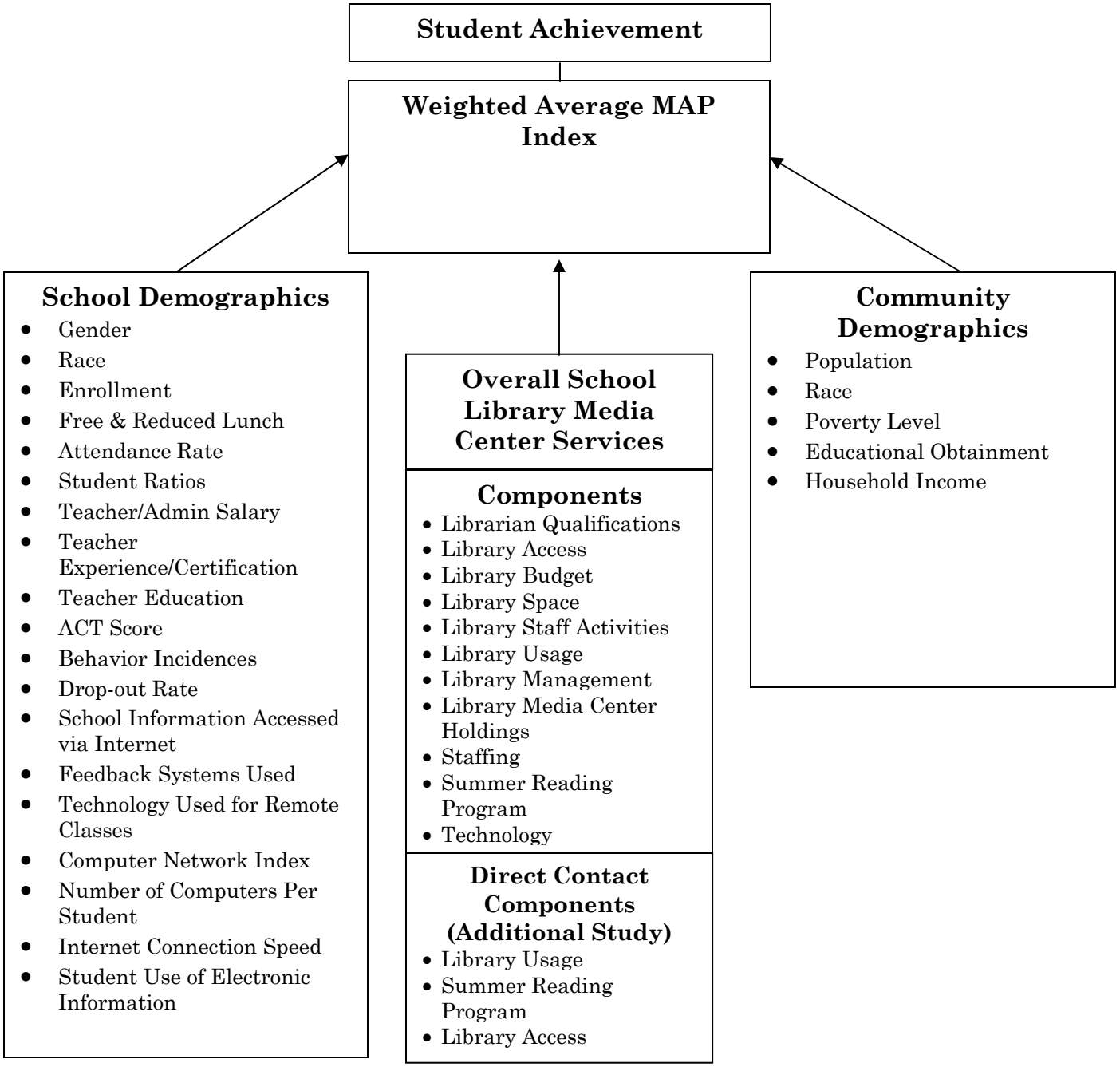
Table 1: Data Aggregation Explanations

Component	Variables Description	Source Q=Questionnaire, CD=Core Data
Librarian Qualifications	Certification and the Highest Level of Education of the Paid Library Staff	Q
Library Access	Hours of Operation & Outside Access o # Hours library was open per typical week during school hours o # Hours library was closed per typical week during school hours o # Hours library was open per typical week before school hours o # Hours library was open per typical week after school hours o # Hours library was open per typical week in the summer o Are any of your licensed online databases accessible from teachers' home computers? o Are any of your licensed online databases accessible from students' home computers?	Q
Library Budget	Total Budget, Materials Budget and Other Budget	Q & CD
Library Space	Square footage & Total Number of Seats	CD
Library Staff Activities	Learning and Teaching, Information Access and Delivery, Program Administration, Collaboration and Leadership	Q
Library Usage	Type and Flexibility of Student Use o Would you describe the most typical student time in the library as structured or non-structured? o How would you describe the most typical student activity in the library: Study Hall, Research, Reading, Other? o Can students access the library information whenever they need to? Yes, How? No, Why?	Q

Component	Variables Description	Source Q=Questionnaire, CD=Core Data
Library Management	Use of Budget, Collection, Development Policies, Relationship to Public Library, Mission/Goals/Objectives, and Coordinator	Q
Library Media Center Holdings	Books, Periodicals, Catalogs and Online Licensed Services	Q & CD
Library Staffing	Total Hours of Paid Staff	Q
Summer Reading Program	Offered and Worked Cooperatively with Public Library ○ Does your school library have a Summer Reading Program? Yes, No ○ Does your library or school work cooperatively with your local public library to promote student participation in a summer reading club at a local public library? Yes, No, N/A due to no public library in the area.	Q
Technology	Level, Availability and Usage	Q & CD

Pictorial Analysis

The following is a pictorial view of how the analysis will be reported to best display the impact of the 11 components of School Library Media Center Services, school demographics, and community demographics on student achievement as well as the relationship each has to the other:



Analysis Explanation

Weighted Average MAP Index (WAMI)

The MAP index is calculated by the Department of Elementary and Secondary Education and is the percent of students at different levels of proficiency in the different core content areas of the statewide-standardized test, the Missouri Assessment Program (MAP). This index was weighted by the number of reportable students in 2002 who took the test in each school grade and content area. It was necessary to compute the Weighted Average MAP Index because the MAP test is not administered to all grades in the same content areas.

School Demographics

The demographics of the responding schools were analyzed to determine their role, if any, on the Weighted Average Map Index. From this research, the top (based on statistical significance) demographic data list was determined.

Table 2: Demographic Data Correlations and Significance to Weighted Average Map Index	Correlation to WAMI	Positive Negative	Statistical Significance (Low is Better)
School Information Accessed via the Internet	0.327	Positive	.000
Percent of Teachers with a Masters Degree or Higher	0.314	Positive	.000
Percent of Teachers with Regular Certificates	0.282	Positive	.000
% White	0.269	Positive	.000
Teacher Average Salary	0.262	Positive	.000
Student/Teacher Ratio	0.261	Positive	.000
Feedback Systems Used	0.242	Positive	.000
Attendance Rate	0.240	Positive	.000
% Black	-0.290	Negative	.000
Free & Reduced Lunch Percentage	-0.385	Negative	.000

Conclusion: School/student demographics, particularly free and reduced lunch at 14.8%, exert a statistically significant impact on student achievement. The 14.8% is derived by squaring the correlation (0.385 x 0.385 = .148).

Community Demographics

The demographics of the counties represented by responding schools, (2000 County Census), were analyzed to determine their role, if any, on Weighted Average Map Index. From this research, the top eight variables were determined to be correlated at a significant level.

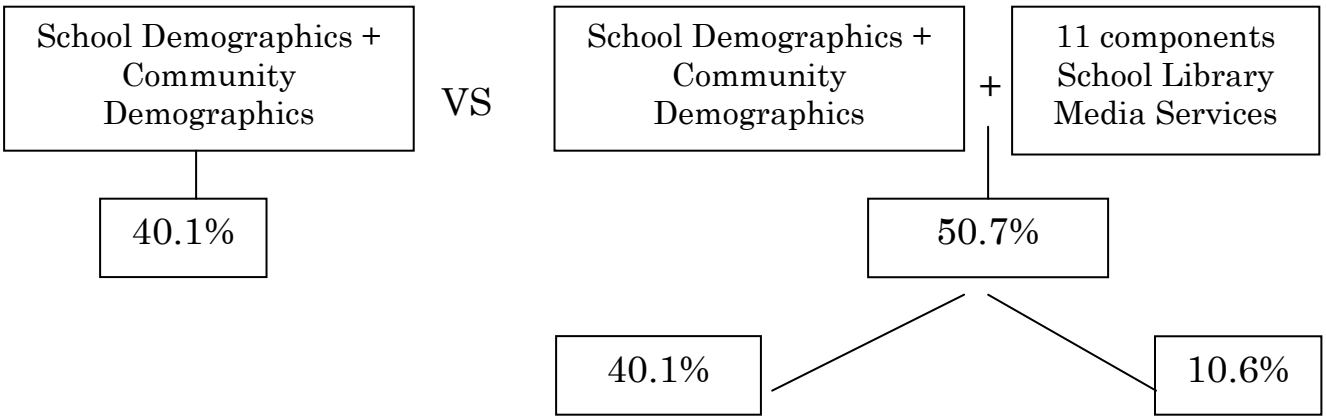
Table 3: Demographic Data Correlations and Significance to Weighted Average Map Index

	Correlation to WAMI	Positive Negative	Statistical Significance (Low is Better)
Median Household Income	0.265	Positive	.000
% College Degree	0.221	Positive	.000
County Population	0.204	Positive	.000
% Associate Degree	0.197	Positive	.000
% Post College	0.164	Positive	.000
% High School Grads	-0.205	Negative	.000
% Less than High School	-0.246	Negative	.000
% Below Poverty Level	-0.268	Negative	.000

Conclusion: Community demographics, particularly poverty level at 7.2%, exerts a statistically significant impact on student achievement. The 7.2% is derived by squaring the correlation (0.268 x 0.268 = .072).

Overall School Library Media Center Services

The relationship between Weighted Average Map Index and School Library Media Center Services was first calculated by combining all 11 of its components. This analysis determined that 12.6% of the variance of the Weighted Average Map Index could be explained by the differences in School Library Media Center Services. Using a more conservative approach, as shown below, School Library Media Center Services could explain up to 10.6% of the Weighted Average Map Index variance that was not explained by the demographic variables, community variables, and school variables.



Conclusion: Although School and Community Demographics are associated at a higher level with student achievement, School Library Media Center Services display a significant relationship to student achievement. Using a conservative approach, School Library Media Center Services explains up to 10.6% of the Weighted Average Map Index variance. This explanation remained intact when applying statistical testing, such that one can say that the finding holds true, not just for the 241 schools in the study, but for all schools in Missouri.

School Library Media Center Services Components

The eleven components of School Library Media Center Services were analyzed individually to determine their role, if any, on the Weighted Average Map Index. The table below displays the relationship discovered and whether it was statistically significant. Statistical significance is important because it means the relationship exists throughout the population and not just in the sample data studied. In other words, the findings are true of all Missouri schools, not just the 241 studied. The last two columns display additional analysis that was conducted to double check the relationship. As the pluses below show, library usage's relationship to the Weighted Average MAP Index is very high (++) throughout all three tests. In addition, its strong statistically significant relationship proves that this relationship is true for all schools not just the 241 studied. The same was true for summer reading and library access. Despite the fact that they both had one plus (+) as opposed to library usage's two pluses (++) their relationship is high and significant.

Table 4: Components Correlations and Significance to Weighted Average Map Index

Components	Relationship?	Significant Relationship?	Still a relationship if every school's demographics are the same?	Still a relationship if all of the other LMS components stay the same?
Library Usage	++	Strong	++	++
Summer Reading	+	Strong	+	+
Library Access	+	Yes	+	+
Library Budget	+	Yes	+	0
Technology	+	Yes	+	0
Librarian Qualifications	+	Yes	0	0
Library Space	+	0	+	0
Library Media Center Holdings	+	0	0	0
Library Staffing	0	0	+	0
Library Management	0	0	0	0
Library Staff Activities	0	0	0	0

Conclusion: The following components significantly impact student achievement:

- **Library Usage**
- **Summer Reading Program**
- **Library Access**

"Direct Contact" Components

Due to the strong significant relationships in the above conclusion, further analysis in the specific areas of library usage, summer reading and library access was performed through an additional study. The following explanation provides the results (the complete results are in the Appendix) for each of these "direct contact" components and attempts to translate the findings into "action-oriented" steps that school libraries and districts can do to impact student achievement:

Library Usage

Hypothesis	Relationship?		Significant?
Library level (Elementary, Middle School, High School) is related to Usage	.254	++	Strong
Library clerical helpers make a difference in Usage	.195	++	Strong
The more print copies per student the more Usage	.152	+	Strong
Budget on other than library equipment & materials influences Usage	.145	+	Strong
Free and reduced lunch rate relates to Usage	.130	+	Strong
The more computers per student the more Usage	.106	0	Strong

The results show that overall there was a statistically significant relationship between the library level (Elementary, Middle, or High School), the availability of clerical help and print copies per student and Library Usage.

Summer Reading Program

Hypothesis	Relationship?		Significant?
Cooperative work with local public library for summer reading would affect Summer Reading Program	.424	++	Strong

The results show there was a strong statistically significant relationship between cooperative work with the local public library for summer reading and a Summer Reading Program. This relationship was the strongest discovered in the additional study analyses.

Library Access

Hypothesis	Relationship?		Significant?
The more variety of online services the more the Access	.474	++	Strong
A district with a library/media coordinator tends to have better Access	.235	++	Strong
The more online library catalog services the more Access	.173	+	Strong
The better the management in general the more Access	.148	+	Strong
Accessibility to central library services helps Access	.141	+	Strong
Access is helped by an automated catalog that is Internet accessible	.116	0	Strong
Larger schools have better Access	.110	0	Strong
Within smaller schools more enrollments tend to have better Access.*	.068	0	Strong
Within medium schools more enrollments tend to have better Access.*	.011	0	0
Within larger schools more enrollments tend to have better Access.*	.087	0	0

* Small school = 33 – 255 Students
* Medium school = 256 – 452 Students
* Larger school = 453 – 2,557 Students

The results show that overall there was a statistically significant relationship between a variety of print and electronic resources the availability of a library/media coordinator, and online catalog services and Library Access.

Conclusion: The following items significantly impact student achievement and should be the focus of efforts within the school district's attempts to enhance student achievement.

- **Cooperate with the local public library to provide a Summer Reading Program.**
- **Capitalize on the fact that elementary schools have more usage and that usage has a relationship to student achievement.**
- **Ensure districts have a library/media coordinator since they enhance access.**
- **Ensure school librarians have clerical help, as it makes a difference in usage.**
- **Offer a multitude and a variety of online and print services as it impacts both access and usage.**

APPENDIX ONE

Appendix 1. Expanded Methodology

Sample

Table 1: Sample by School Size

School Size	2002 Core Data		Questionnaire Results	
	#	%	#	%
Small (33-255 Students)	697	32.8%	119	15.6%
Medium (256-452 Students)	719	33.8%	271	35.5%
Large (453-2,557 Students)	712	33.5%	374	49.0%
Total	2,128	100.0%	764	100.0%
Not Determined	115		18	
Total	2,243		782	

Per Table 1, the total sample allows the questionnaire results to be at 95% confidence when assuming a margin of error of 2.83%.

Available Core Data

The Department provided a vast amount of school building level data, known as "core data." The following is a brief description of what these data included. Much of these data was an integral part of the analysis of the effect of School Library Media Center Services on student achievement.

Student Data

These files included basic information on the student population for each school building in the state. They included total enrollment, number and percentage of males and females, and ethnicity of students (White, Black, Asian, Hispanic, and Native American).

Other student information included the ratios of students to teachers and administrators, number and percentage of students receiving free or reduced school lunches, the attendance rate, and discipline data. The discipline data included variables such as number of incidents that involved alcohol, tobacco, drugs, a weapon, or a violent act, as well as computed incident rates per 100 students.

The Department also provided data that applied specifically to high schools. This data included number of dropouts, graduation rate, percentage of graduates taking the ACT, and the number and percentage of graduates scoring at or above the national average on the ACT. Also included was graduation follow-up data. The graduation follow-up tracks previous graduates one year after graduation. This data included the percentage of students who were enrolled in a four-year college/university, enrolled in a two-year program, employed, and/or serving in the military.

Teacher/Administrator Data

Data was provided on the average salary of teachers and administrators, the percentage of teachers with a masters degree or higher, and the average years of experience in the teacher's current district, in the State of Missouri, and in public education.

Librarian Data

Data included the number of full-time librarians in each school, the number of full-time clerical helpers, the librarians' average salary, as well as the librarians' average years of experience in their current school district, the State, and in public education.

Library Media Data

Probably the most important component of the core data was that concerning the School Library Media Center. The first section of the data included the number of students and staff served by the School Library Media Center, the square footage available for reading and reference, the square footage available for ancillary services, and the total number of seats available in the School Library Media Center.

The second section described the School Library Media Center's holdings. Included was the total number of holdings the School Library Media Center had in the following areas:

- Fiction
- Non-Fiction
- Magazines
- Newspapers
- Periodical Indexes
- Reference
- Visual Materials

The final component of the School Library Media Center data dealt with funding. Included were the funds used to purchase supplies, equipment, materials, and for miscellaneous purposes.

Census of Technology

The final aspect of core data used was the technology available in each school building as well as the usage of the technology by students, staff and administrators. The first part of these data determined if the school building had a connection to the Internet and if so, was that connection a dedicated or dial-up connection. It also provided the speed (bandwidth) of that connection. This section of the core data also contained the total number of computers in the school building, if and how many of the computers were connected to a Local Area Network (LAN), how many servers were in the building, and if the school was connected to a Wide Area Network (WAN). The data for the computers and the servers included the operating system they were running and identified if the servers were running any of the following applications: email (no hyphens in other sections), Internet, Internet filtering hardware/software, a firewall, File Transfer Protocol (FTP), and/or a Proxy Server.

The second part of the technology data dealt with the usage of the technology by students, teachers, and administrators. Information showed whether students used satellite, cable TV, compressed video, interactive TV or desktop technologies in order to participate in remote classes.

Other usage data identified the percentage of students, teachers, and administrators who use the following:

- educational software
- email
- web-browser
- EBSCO host or other periodical databases
- electronic encyclopedia
- electronic/automated library catalog
- computer-generated presentations
- writing assignments
- research information collection

These data identified the percentage of teachers who use technology to:

- prepare lesson plans
- create and use spreadsheet/database (student records)
- track student performance
- assess student performance
- communicate with parents
- communicate with DESE
- deliver instruction and presentations

The third part of the technology data identified who, within the school building, was responsible for the leadership of teachers in the integration of technology into the curriculum. Was it the instructional technology specialist, the technology coordinator, the school administrator, the library/media specialist, the teachers themselves, outside vendors, or regional centers/Regional Professional Development Centers?

Another aspect of the technology data described what information was available for access outside of the school building via the Internet. The data identified if school schedules, homework assignments, report cards/attendance information, community information, and/or teacher/school information could be accessed via the Internet.

The final component of the technology data dealt with the types of feedback systems the school had available for parents and patrons. The data indicated the number of schools that used email or listservs as types of feedback, if they had an automated absentee calling system, if they used voice mail, and if they had a homework hotline via telephone or email.

Questionnaire

The questionnaire of School Library Media Center Services focused on several areas that could have an impact on student achievement. These included:

1. **Respondent Information**

   The questionnaire first required identifiers of the responding school—the name of the school building and the school district and the grade levels served. In addition, it required information about the individual respondent—his/her name, responsibility (one or more school buildings), certification, as well as telephone number, fax number and email address. All of this information was required to assess the types of respondents and how well the overall state population was represented.

2. **Library Management**

The second part of the questionnaire included questions about the management of the participating school's library - the receipt, preparation, amount, and consistency of the library's budget, the ongoing communication with the public library, the existence of a library advisory committee, policies on copyright, collection development, materials selection, weeding, and reconsideration of challenged materials. In addition, this section of the questionnaire asked whether the school's library had a mission, defined goals and objectives, policies and procedures manual, and a district wide library or media coordinator. The final section of this part of the questionnaire inquired about the existence of a summer reading program, the collaboration with the public library's summer reading program, and the coordination of distance learning.

3. **Library Staff**

This part of the questionnaire contained items concerning the number of people and total person-hours worked by paid staff with different types of qualifications. It also asked whether the librarian and/or support staff had extended contracts and the types of activities that typically took place during that time period. This section of the questionnaire also requested the longevity, hours, and type (student or adult) of volunteers the library utilized weekly.

4. **Service Hours of the School Library**

The fourth part of the questionnaire contained items concerning the School Library Media Center's hours of operation – before, during, and after school in a typical school week and in a typical week during summer months. This section also asked questions about how a student typically spent their time in the library, structured or non-structured, doing what, as well as whether they had on-demand access.

5. **Staff Activities**

Perhaps the most fundamental questions examined by this study concentrated on how often the paid librarian engaged in particular activities. The questionnaire included a comprehensive list of staff activities divided into five categories. Hours per typical week spent by staff on activities were requested for each of these categories:

- Learning and Teaching
- Information Access and Delivery

- Program Administration
- Collaboration
- Leadership

This section of the questionnaire also asked the librarian's opinion of their success in embedding information literacy skills into the core curriculum as well as the level of support they received from the principal of their school building. The rationale for dividing their time in so many ways was to obtain specific insights into exactly what school library media specialists' do that makes a difference in students' performance on achievement tests.

6. Library/Loan Use

The next part of the questionnaire solicited statistics concerning how often students and staff (e.g., administrators, teachers, others) interacted with School Library Media Center Staff for different purposes, including how much and what type (flexible, rigid) of library/information skills instruction occurred. This section also included the number and types of library visits, circulation of library materials as well as counts of materials loaned to other libraries and obtained from outside the library (e.g., interlibrary loans, intra-district loans).

7. Library Technology

Due to the data available in the Departments Census of Technology, the next section of the questionnaire collected a small amount of detailed information about library technology. Respondents were asked to identify the automated and online catalogs, access to other school databases, as well as the availability of telephones, faxes, video projectors, digital cameras, satellite dishes, and laptops. Respondents were further asked to identify if the school had a board adopted Internet Usage Policy.

8. Library Collection

This section of the questionnaire solicited an inventory of the collection that was not available in the Departments core data. This included the collection by format, including non-print items (e.g., software, and audio-visual materials), and the rapidly growing "electronic" sector (e.g., CD-ROM, laser discs, and online database subscriptions). This part of the questionnaire also inquired about access to the collection from outside the building, the system of collection evaluation, and the volume of collection purchases.

Statistical Analysis

The statistical analyses included identifying the connections between School Library Media Center Services and student achievement in the sample, and determining the 'significance levels' that indicate the extent to which the sample represents the population. The following topics describe the types of analyses done.

1. **Statistical Significance**

   A sample is a part of the population from which the data were drawn. A sample contains features of its population to some extent. A larger sample tends to contain features of its population to a larger extent. However, differences always exist, more or less, between a sample and its population. When making an assertion about the population based on its sample, the error of the assertion must be calculated and evaluated. Statistical significance is for that purpose.

   Statistical significance is usually represented by the p-value, which is the probability of making errors in extending a result of a sample to its population. For example, if the correlation coefficient between two variables in a sample was 0.20 and the p-value was 0.08, then there is an 8% chance of making a mistake, if it is claimed that the two variables are also related in the population (i.e., there is 8% chance the two variables are not related at all in the population).

   Since a p-value is the probability of making errors, the smaller the p-value, the more confident one can be to extend the result of a sample to its population. The two most commonly used significance levels to determine whether a sample statistic is 'statistically significant' are p=0.05 and p=0.01.

2. **Hypothesis Testing**

   Hypothesis testing was used throughout all statistical analyses. When considering the statistical significance, a t-test or F-test was used to get the p-value that indicated the significance. For example, hypothesis testing was performed after running a multiple regression on the Weighted Average MAP index and some School Library Media Center Service variables. The null hypothesis was 'Weighted Average MAP index was not related to those School Library Media Center Service variables.' An F-test gives the p-value so that it can be determined whether or not the null hypothesis should be rejected if, for example, the p-value was small enough.

3. Bivariate Correlation

Bivariate correlation reveals how two variables are statistically related, with the assumption that other variables do not exist. Pearson's correlation coefficient (r) is a useful statistical indicator for the bivariate correlation. Since r is a statistical indicator, it is accompanied with a 'significance level' to tell whether the indicator value is statistically significant. The r-value is on the scale of -1.00 to +1.00. Negative values indicate that a decline in one variable is associated with an increase in another, while positive values indicate that two variables increase together. If r=0.00, then the two variables are not related. The value of r indicates the extent to which two variables change together. For example, if r=0.40 it implies that $0.40^2 = 0.16$ or 16% of the variance (sum of the squares of variability) is associated with the variance of another variable.

The square of R-value is called the coefficient of determination, denoted by R^2. It gives the percent of the variance of a variable that is explained by another variable or a set of other variables (i.e., School Library Media Center Service variables and school demographic variables).

R^2 has a weakness in measuring the correlation between the Weighted Average MAP index and a set of School Library Media Center Service variables. R^2 increases as more variables are added to the independent variable set, no matter whether the added variables actually explain more variance of the Weighted Average MAP index. For this reason, the adjusted R^2, denoted by R_a^2, was used to take into account the number of variables involved. R_a^2 is more conservative and more accurate than R^2 in measuring the correlation between a variable and a set of other variables. Adjusted R^2 may not increase; sometimes it may decrease, as more variables are added to the independent variable set, which implies that the added variables do not have an additional contribution in explaining the changes of the Weighted Average MAP index on top of the initial independent variables.

4. Multiple Regressions

Multiple regressions were used in the project to test the correlation between a dependent variable Y (Weighted Average MAP index) and any set of variables. School Library Media Center Services was organized into eleven components. Most of the components were composed of two or more variables. The matrix of correlation coefficients provides correlation between the individual variables. It did not give the correlation between the dependent variable Y and a component that was composed of many variables. Therefore, multiple regression was used to find the correlation between Y and

the component by reviewing the R^2 value and the significance of the regression.

5. Partial Correlation

Partial correlation reveals the correlation between variables when holding some other variables constant. Suppose the correlation between the Weighted Average Map Index and technology used in the library was $R^2=0.1$, which means 20% of the Weighted Average Map Index's variance is associated with the changes of technology used in the library while the other variables were not considered. This does not mean that if technology use in the library were doubled that the Weighted Average Map Index would increase by 10%. There may be other variables (such as technology used on campus, school budget, and average income of the community) that contribute to the Weighted Average Map Index. Partial correlation helps single out the effect of the interested variables.

Two methods were considered to reveal the partial correlation. These were the partial correlation coefficient method and the incremental partial correlation method. The incremental partial correlation method was chosen for the analyses in this project since it could provide more accurate statistics that the partial correlation coefficient method.

The partial correlation coefficient gives the effect of a variable when holding some other variables constant. The partial correlation coefficient was denoted by the symbol $R^2(Y,X_1 | X_2)$ which means the R^2 value between Y and X_1 when holding X_2 constant. It was calculated by the formula $R^2(Y,X_1 | X_2) = (SSR(X_1, X_2) - SSR(X_2)) / (SST(Y) - SSR(X_2))$.

The weakness of the partial correlation coefficient, similar to R^2, was that it did not take the number of variables involved into account. It became more inaccurate when more variables were involved in the calculation of the partial coefficients. In this research, there were up to 63 variables in a model; therefore the incremental partial correlation method was used on the adjusted R^2, as described below, to improve the accuracy.

Incremental partial correlation method

The incremental partial correlation, $R_I^2(Y, X_1 | X_2)$, measures the effect of variable set X_1 on the variable Y in addition to the effect of variable set X_2 on Y. The variable set X_2 was called the control variable set. $R_I^2(Y,X_1 | X_2) = R_a^2(Y, X_1 \text{ and } X_2) - R_a^2(Y, X_2)$, where $R_a^2(Y, X_1 \text{ and } X_2)$ was the adjusted R^2 between variable Y and the joint variable set (X_1, X_2), $R_a^2(Y, X_2)$ was the adjusted R^2 between variable Y and the control variable set X_2. The reason

for using the adjusted R^2 in calculating $R_I^2(Y, X_1 | X_2)$ was to make the resultant incremental partial correlation more accurate when many variables were involved in the analyses.

Practically, the incremental partial correlation, $R_I^2(Y, X_1 | X_2)$, was worked out in the following way. Run the multiple regression model on the control set of independent variables X_2. Then, add another set of variables X_1 to the independent variable set, run the regression model again. The difference of the adjusted R^2 values in the results of the two regressions indicate the additional explanation of the variance of Y by the add-in variables on top of the connection already set up between Y and the control set of independent variables. Since the adjusted R^2 did not always increase when more variables were added in, the incremental partial correlation could be negative, which implied that the added variables had no contribution on top of the original variables.

The incremental partial correlation between the Weighted Average MAP index and each component of School Library Media Center Services variables, which was called internal incremental partial correlation, was calculated while holding the other components of School Library Media Center Services as the control variables in order to compare the affects of the School Library Media Center Services components on the Weighted Average Map Index. Also calculated was the incremental partial correlation between the Weighted Average Map Index and each of the components of the School Library Media Center Services given the community and school variations, which was called external incremental partial correlation, in order to reveal the affect of School Library Media Center Services components on the Weighted Average Map Index on top of the community and school variables. For these purposes, using adjusted R^2 would result in a more accurate comparison. The variables of School Library Media Center Services were grouped into 11 components with a different number of variables in each component. Some components had only one variable, while others had up to nine. If R^2 was used in calculating the partial correlation of each component of School Library Media Center Services on top of the community and school variations, then the component with nine variables would tend to show larger partial correlation than the component with one variable. Using the adjusted R^2 made the comparison of the partial contributions of the various components of School Library Media Center Services on an equal base.

APPENDIX TWO

Appendix 2. Results of Testing Correlations with USAGE

Hypothesis	Elements (variables)	Category of Elements	Result	
			Adjstd R^2	p-value
The higher level (elementary, middle, and high school) the library, the more usage.	Library levels (elementary=1, middle=2, high=3)		.388	.000
Library begin grade served is related to Usage.	Library begin grade served.	Core data	.254	.000
Library end grade served is related to Usage.	Library End grade served	Core data	.254	.000
The more holdings per student the more Usage	Total holdings per student	Holdings	.152	.000
The budget on other than library equipment and materials has an influence on Usage	Budget on other than equipment and material	Core (Budget)	.145	.000
Free & reduced lunch percentage is related to Usage.	Free & reduced lunch percentage	Core data	.130	.000
The more computers per student the more Usage	Number of computers per student	Technology	.106	.000
Online databases accessible from students' homes would increase Usage	Database for students at home	Access	.093	.000
The higher the Qualification the more the Usage	The only var. of Qualification	Qualification	.088	.000
The more full time library staffs per student the more Usage	Number of full time library staffs per student	Questionnaire III 1.1/ # of students (Staffing)	.099	.001
The more adult volunteers the better Usage	Number of adult volunteers	Questionnaire III 1.9/ # of students (Staffing)	.092	.001
The more hours of paid-staffs (full time + part-time) the better Usage	Hours of paid staffs per students	Questionnaire III 1.12/ # of students (Staffing)	.082	.001
The more variety of online services the more Usage	Number of online services	Technology	.075	.001
The better staffing in general the more Usage	The only variable in Staffing	Staffing	.075	.001
The more volunteers the better Usage	Total number of volunteers	Questionnaire III 1.11/ # of students (Staffing)	.089	.002
The larger school tends to have better Usage.	Total enrollment	Core data	.069	.002
The more online library catalog services the more Usage	Online catalog services	Technology	.066	.003
Better integration of information literacy skills across curriculum would help Usage.	Successful in integration of information skills	Questionnaire V 2 (Activity)	.058	.006
Online databases accessible from teachers' homes would increase Usage	Database for teachers at home	Access	.057	.007
The more paid-staffs (full time + part-time) the better Usage	Number of paid staffs per students	Questionnaire III 1.8/ # of students (Staffing)	.055	.010
More open hours before or after school would result in more Usage	Hours open per week before / after school	Access	.052	.011
The Summer program is related to Usage	The only Summer variable	Summer	.050	.013
An automated district-wide catalog would help Usage	An automated district wide catalog?	Questionnaire VII 1.1 (Cooperation / Technology)	.045	.019

Hypothesis	Elements (variables)	Category of Elements	Result	
			Adjstd R^2	p-value
More library loans from / to other libraries would help Usage	Total number of library loans inward and outward	Sum of the 3 Numbers in Questionnaire VI 2. (Cooperation)	.041	.026
Whether cooperatively work with local public library for summer reading is related to Usage	Cooperate with local public library?	Questionnaire II 12 (Cooperation / Summer)	.045	.027
The more space per student the more the Usage	Square feet per student	Space	.041	.028
It would help Usage if the automated catalog is Internet accessible.	An automated catalog is Internet accessible?	Questionnaire VII 1.2 (Technology)	.041	.029
Participating in evaluation system of library resources would help Usage.	Do libraries participate in evaluation system?	Questionnaire VIII 3 (Management)	.038	.039
The more staff activities in leadership the more Usage	Leadership	Library staff activity	.034	.048
Accessible to central library services would help Usage.	Access to central library services?	Questionnaire VII 1.4 (Cooperation)	.033	.051
Library clerical helpers make difference in Usage	Number of full-time library clerical helpers	Core data (Staffing)	.195	.052
Using more inter-library loan would help Usage	Hours managing inter-library loans	Questionnaire V 1.17 (Cooperation)	.031	.061
Drawing in resources from district libraries would help Usage	Hours drawing in from other district libraries	Questionnaire V 1.10 (Cooperation)	.029	.068
The more part-time library staffs per student the better Usage	Number of part-time library staffs per student	Questionnaire III 1.3/ # of students (Staffing)	.029	.096
The better the management in general the more Usage	The only variable in Management	Management	.018	.152
Librarian's working with students one-to-one relate to Usage positively	Hours librarians working w/ students 1-to-1	Questionnaire V 1.4 (Activity)	.018	.156
The higher the librarian's salary the better Usage	Librarian avg salary	Core data (Staffing)	.017	.161
Having a district library / media coordinator tends to have better Usage	District has a library coordinator?	Questionnaire II 14 (Cooperation / Management)	.015	.186
Student / Instructor ratio is related to Usage.	Student / Instructor ratio	Core data	.010	.250
Student / Teacher ratio is related to Usage.	Student / Teacher ratio	Core data	.010	.250
The more computer networking the more Usage	Computer networking	Technology	.010	.252
Number of behavioral incidents is related to Usage.	Number of behavioral incidents	Core data	.026	.268
Experience of librarians in public education makes difference in Usage	Librarians avg. year experience in public education	Core data (Staffing / Qualification)	.009	.268
Discussing library activities with community library would help Usage	Hours in discussing with community libraries	Questionnaire V 1.21 (Cooperation)	.008	.283
The more staff activities in information access and delivery the more Usage	Information access and delivery	Library staff activity	.007	.310
The higher budget on library equipment, the better Usage	Budget on library equipment	Core data (Budget)	.003	.369

APPENDIX THREE

Appendix 3. Results of Testing Correlations with SUMMER PROGRAM

Hypothesis	Elements (variables)	Category of Elements	Result	
			AdjstdR^2	p-value
Whether cooperatively work with local public library for summer reading is related to Summer programs	Cooperate with local public library?	Questionnaire II 12 (Cooperation / Summer)	.424	.000
The more adult volunteers the better Summer programs	Number of adult volunteers	Questionnaire III 1.9/ # of students (Staffing)	.050	.001
The better the management in general the more Summer program	The only variable in Management	Management	.044	.001
The more hours of paid-staffs (full time + part-time) the better Summer programs	Hours of paid staffs per students	Questionnaire III 1.12/ # of students (Staffing)	.041	.001
The more volunteers the better Summer programs	Total number of volunteers	Questionnaire III 1.11/ # of students (Staffing)	.042	.002
Library begin grade served is related to Summer programs.	Library begin grade served.	Core data	.036	.002
Library end grade served is related to Summer Programs.	Library End grade served	Core data	.036	.002
Online databases accessible from students' homes would increase Summer programs	Database for students at home	Access	.035	.002
The higher the librarian's salary the more Summer programs	Librarian avg salary	Core data (Staffing)	.031	.004
Online databases accessible from teachers' homes would increase Summer programs	Database for teachers at home	Access	.030	.004
The more (library?) budget per student the more the Summer programs	Avg. total budget per student	Budget	.021	.014
The more student volunteers the better Summer programs	Number of student volunteers	Questionnaire III 1.10/ # of students (Staffing)	.022	.022
Having a district library / media coordinator tends to have better Summer programs	District has a library coordinator?	Questionnaire II 14 (Cooperation / Management)	.016	.028
The more paid-staffs (full time + part-time) the better Summer programs	Number of paid staffs per students	Questionnaire III 1.8/ # of students (Staffing)	.013	.046
The more variety of online services the more Summer programs	Number of online services	Holdings	.010	.070
The more the library material budget per student the more the Summer programs	Library material budget per student	Budget	.008	.084
The better staffing in general the more Summer programs	The only variable in Staffing	Staffing	.008	.090
The more full time library staffs per student the better Summer programs	Number of full time library staffs per student	Questionnaire III 1.1/ # of students (Staffing)	.007	.124
If the library has at least one catalog (online or in-print), then the more Summer program	Library has at least one catalog	Holdings	.006	.128

Hypothesis	Elements (variables)	Category of Elements	Result	
			AdjstdR^2	p-value
Library clerical helpers make difference in Summer programs	Number of full-time library clerical helpers	Core data (Staffing)	.006	.266
The more hours of library staffs the better Summer programs	Total hours of paid- and unpaid-staffs	Questionnaire III 1.15/ # of students (Staffing)	.000	.313
The more computer networking the more Summer programs	Computer networking	Technology	.000	.335
The higher budget on library equipment, the better Summer programs	Budget on library equipment	Core data (Budget)	-.001	.396
The more seats per student in library the more Summer program	Number of seats per student	Space	-.002	.432
The more online library catalog services the more Summer programs	Online catalog services	Technology	-.002	.491
Experience of librarians in the district makes difference in Summer programs	Librarians avg. year experience in district	Core data (Staffing / Qualification)	-.002	.497
The more computers per student the more Summer	Number of computers per student	Technology	-.003	.527
The more the library budget per student the more the Summer programs	Library budget per student (Core data)	Budget	-.003	.544
The more holdings per student the more Summer programs	Total holdings per student	Holdings	-.003	.555
The more staff activities in information access and delivery the more Summer Program	Program administration	Library staff activity	-.003	.555
The higher the qualification the more the Summer programs	The only var. of Qualification	Qualification	-.003	.560
More open hours during school hours would result in more Summer programs	Hours open per week during school hours	Access	-.003	.589
Experience of librarians in Missouri makes difference in Summer programs	Librarians avg. year experience in Missouri	Core data (Staffing / Qualification)	-.003	.603
Having a library mission statement and goals tends to have better Summer programs	Have a mission statement?	Questionnaire II 10 (Management)	-.003	.605
To what extent the principal supports library relates to Summer programs	School principal's support	Questionnaire V 3 (Management)	-.003	.620
The larger school tends to have better Summer programs.	Total enrollment	Core data	-.003	.643
The more space per student the more the Summer program	Square feet per student	Space	-.003	.646
The higher budget on library materials, the better Summer programs	Budget on library material	Core data (Budget)	-.004	.709
The more staff activities in information access and delivery the more Summer Program	Information access and delivery	Library staff activity	-.004	.722
Experience of librarians in public education makes difference in Summer programs	Librarians avg. year experience in public education	Core data (Staffing / Qualification)	-.004	.755
The more part-time library staffs per student the better Summer	Number of part-time library staffs per student	Questionnaire III 1.3/ # of students (Staffing)	-.005	.771

Hypothesis	Elements (variables)	Category of Elements	Result	
			AdjstdR^2	p-value
The budget on other than library equipment and materials has an influence on Summer programs	Budget on other than equipment and material	Core (Budget)	-.004	.804
More open hours before or after school would result in more Summer programs	Hours open per week before / after school	Access	-.004	.820
The more full-time librarians the more Summer programs	Number of Full-time librarians	Core data (Staffing)	-.004	.886
Having an active advisory committee is related to more Summer Programs	Have active advisory committee?	Questionnaire II 6 (Management)	-.004	.943
The more staff activities in leadership the more Summer programs	Leadership	Library staff activity	-.004	.970

Hypothesis	Elements (variables)	Category of Elements	Result	
			Adjstd R^2	p-value
Total number of volumes purchased last year is related to Usage.	Total number of volumes purchased	Questionnaire VIII 6 (new Holdings)	.003	.379
Communicating with building and district library staffs would help Usage	Hours communicating with district staffs	Questionnaire V 1.23 (Management / Cooperation)	.002	.390
Having a library mission statement and goals would help improve Usage	Have a mission statement?	Questionnaire II 10 (Management)	.002	.395
Experience of librarians in Missouri makes difference in Usage	Librarians avg. year experience in Missouri	Core data (Staffing / Qualification)	.001	.429
The more seats per student in library the more Usage	Number of seats per student	Space	-.001	.463
Experience of librarians in the district makes difference in Usage	Librarians avg. year experience in district	Core data (Staffing / Qualification)	-.002	.474
If the library has at least one catalog (online or in-print), then the more Usage	Library has at least one catalog	Holdings	-.003	.499
The more student volunteers the better Usage	Number of student volunteers	Questionnaire III 1.10/ # of students (Staffing)	-004	.504
The more hours of library staffs the better Usage	Total hours of paid- and unpaid-staffs	Questionnaire III 1.15/ # of students (Staffing)	-.004	.508
The more the library material budget per student the more the Usage	Library material budget per student	Budget	-.004	.539
Having an active advisory committee would help improve Usage	Have active advisory committee?	Questionnaire II 6 (Management)	-.006	.567
More open hours during school hours would result in more Usage	Hours open per week during school hours	Access	-.006	.590
The more budget per student the more the Usage	Avg. total budget per student	Budget	-.008	.639
To what extent the principal supports library relates to Usage	School principal's support	Questionnaire V 3 (Management)	-.010	.668
Restrictions of student Internet access has effect on Usage	Restrictions of student Internet access	Questionnaire VII 3 (Internet Policy)	-.010	.682
Having, or not having, an Internet access policy results in different Usage	Have an Internet policy?	Questionnaire VII 2 (Internet Policy)	-.013	.739
The more staff activities in program administration the more Usage	Program administration	Library staff activity	-.015	.784
Drawing in resources from community libraries would help Usage	Hours drawing in from community libraries	Questionnaire V 1.11 (Cooperation)	-.016	.802
The higher budget on library materials, the better Usage	Budget on library material	Core data (Budget)	-.019	.866
Working with teachers / students for selecting collections would help Usage	Hours working with readers to select collection	Questionnaire V 1.22 (Management)	-.019	.875
The more the library budget per student the more the Usage	Library budget per student (Core data)	Budget	-.023	.937
Meeting with building and district library staffs would help Usage	Hours meeting with district staffs	Questionnaire V 1.24 (Management / Cooperation)	-.026	.964

Hypothesis	Elements (variables)	Category of Elements	Result	
			Adjstd R^2	p-value
Having a library policy and procedures manual would help improve Usage	Have a library policy?	Questionnaire II 9 (Management)	-.029	.985
The more full-time librarians the better Usage	Number of Full-time librarians	Core data (Staffing)	-.030	.992

APPENDIX FOUR

Appendix 4. Results of Testing Correlations with ACCESS

Hypothesis	Elements (variables)	Category of Element	Result	
			Adjstd R^2	p-value
The more variety of online services the more Access	Number of online services	Technology	.474	.000
Having a district library / media coordinator tends to have better Access	District has a library coordinator?	Questionnaire II 14 (Cooperation / Management)	.235	.000
The more online library catalog services the more Access	Online catalog services	Technology	.173	.000
The better the management in general the more Access	The only variable in Management	Management	.148	.000
Accessible to central library services would help Access.	Access to central library services?	Questionnaire VII 1.4 (Cooperation)	.141	.000
It would help Access if the automated catalog is Internet accessible.	An automated catalog is Internet accessible?	Questionnaire VII 1.2 (Technology)	.116	.000
The larger school tends to have better Access.	Total enrollment	Core data	.110	.000
Meeting with building and district library staffs would help Access	Hours meeting with district staffs	Questionnaire V 1.24 (Management / Cooperation)	.087	.000
More library loans from / to other libraries would help Access	Total number of library loans inward and outward	Sum of the 3 Numbers in Questionnaire VI 2. (Cooperation)	.082	.000
Having a library mission statement and goals would help improve Access	Have a mission statement?	Questionnaire II 10 (Management)	.076	.000
The more holdings per student the more Access	Total holdings per student	Holdings	.072	.000
An automated district-wide catalog would help Access	An automated district wide catalog?	Questionnaire VII 1.1 (Cooperation / Technology)	.072	.000
The more adult volunteers the better Access	Number of adult volunteers	Questionnaire III 1.9/ # of students (Staffing)	.079	.001
Student / Instructor ratio is related to Access.	Student / Instructor ratio	Core data	.069	.001
Student / Teacher ratio is related to Access.	Student / Teacher ratio	Core data	.069	.001
The higher the librarian's salary the better Access	Librarian avg salary	Core data (Staffing)	.065	.001
The more computer networking the more Access	Computer networking	Technology	.059	.002
Working with teachers / students for selecting collections would help Access	Hours working with readers to select collection	Questionnaire V 1.22 (Management)	.053	.003
The more full time library staffs per student the more Access	Number of full time library staffs per student	Questionnaire III 1.1/ # of students (Staffing)	.061	.004
Free & reduced lunch percentage is related to Access.	Free & reduced lunch percent	Core data	.052	.004
Communicating with building and district library staffs would help Access	Hours communicating with district staffs	Questionnaire V 1.23 (Management / Cooperation)	.043	.009
Whether cooperatively work with local public library for summer reading is related to Access	Cooperate with local public library?	Questionnaire II 12 (Cooperation / Summer)	.045	.011

Hypothesis	Elements (variables)	Category of Element	Result	
			Adjstd R^2	p-value
The Summer program is related to Access	The only Summer variable	Summer	.041	.011
The more volunteers the better Access	Total number of volunteers	Questionnaire III 1.11/ # of students (Staffing)	.048	.013
Drawing in resources from district libraries would help Access	Hours drawing in from other district libraries	Questionnaire V 1.10 (Cooperation)	.039	.014
The more hours of paid-staffs (full time + part-time) the better Access	Hours of paid staffs per students	Questionnaire III 1.12/ # of students (Staffing)	.038	.015
Library begin grade served is related to Access.	Library begin grade served.	Core data	.037	.017
Library end grade served is related to Access.	Library End grade served	Core data	.037	.017
Drawing in resources from community libraries would help Access	Hours drawing in from community libraries	Questionnaire V 1.11 (Cooperation)	.034	.023
Discussing library activities with community library would help Access	Hours in discussing with community libraries	Questionnaire V 1.21 (Cooperation)	.030	.032
The more computers per student the more Access	Number of computers per student	Technology	.026	.047
Better integration of information literacy skills across curriculum would help Access	Successful in integration of information skills	Questionnaire V 2 (Activity)	.025	.052
Having a library policy and procedures manual would help improve Access	Have a library policy?	Questionnaire II 9 (Management)	.019	.092
The number of class visits is related to Access	Number of class visits	Usage	.014	.137
If the library has at least one catalog (online or in-print), then the more Access	Library has at least one catalog	Holdings	.012	.164
The more full-time librarians the better Access	Number of Full-time librarians	Core data (Staffing)	.012	.169
The more the library material budget per student the more the Access	Library material budget per student	Budget	.011	.182
Total number of volumes purchased last year is related to Access.	Total number of volumes purchased	Questionnaire VIII 6 (new Holdings)	.010	.209
The more staff activities in information access and delivery the more Access	Information access and delivery	Library staff activity	.009	.210
Having an active advisory committee would help improve Access	Have active advisory committee?	Questionnaire II 6 (Management)	.009	.213
The more staff activities in program administration the more Access	Program administration	Library staff activity	.009	.215
The more part-time library staffs per student the better Access	Number of part-time library staffs per student	Questionnaire III 1.3/ # of students (Staffing)	.007	.265
Number of behavioral incidents is related to Access.	Number of behavioral incidents	Core data	.015	.295
Participating in evaluation system of library resources would help Access.	Do libraries participate in evaluation system?	Questionnaire VIII 3 (Management)	.005	.302
The higher the qualification the more the Access	The only variable of Qualification	Qualification	.004	.321
The more student volunteers the better	Number of student volunteers	Questionnaire III 1.10/ # of	.003	.362

Access		students (Staffing)		

Hypothesis	Elements (variables)	Category of Element	Result	
			Adjstd R^2	p-value
The more seats per student in library the more Access	Number of seats per student	Space	.002	.367
Library clerical helpers make difference in Access	Number of full-time library clerical helpers	Core data (Staffing)	.008	.392
The more space per student the more the Access	Square feet per student	Space	.000	.420
Librarian's working with students one-to-one relate to Access positively	Hours librarians working w/ students 1-to-1	Questionnaire V 1.4 (Activity)	-.001	.452
Number of books and other materials check out is related to Access	Books checked out	Usage	-.001	.463
The number of individual visits is related to Access	Number of individual visits	Usage	-.002	.465
The more staff activities in leadership the more Access	Leadership	Library staff activity	-.002	.469
The more (library?) budget per student the more the Access	Avg. total budget per student	Budget	-.004	.547
To what extent the principal supports library relates to Access	School principal's support	Questionnaire V 3 (Management)	-.005	.584
More hours on managing inter-library loans would help Access	Hours managing inter-library loans	Questionnaire V 1.17 (Cooperation)	-.006	.602
The higher budget on library materials, the better Access	Budget on library material	Core data (Budget)	-.007	.641
Restrictions of student Internet access has effect on Access	Restrictions of student Internet access	Questionnaire VII 3 (Internet Policy)	-.008	.671
The more hours of library staffs the better Access	Total hours of paid- and unpaid- staffs	Questionnaire III 1.15/ # of students (Staffing)	-.011	.727
The more paid-staffs (full time + part-time) the better Access	Number of paid staffs per students	Questionnaire III 1.8/ # of students (Staffing)	-.011	.764
The number of information skills instruction contacts with individuals is related to Access	Number of information skills help to individuals	Usage	-.011	.792
The higher budget on library equipment, the better Access	Budget on library equipment	Core data (Budget)	-.011	.799
The scheduled class visits are related to Access	Scheduled class visits	Usage	-.012	.821
Experience of librarians in the district makes difference in Access	Librarians avg. year experience in district	Core data (Staffing / Qualification)	-.013	.848
Experience of librarians in Missouri makes difference in Access	Librarians avg. year experience in Missouri	Core data (Staffing / Qualification)	-.014	.894
The more the library budget per student the more the Access	Library budget per student (Core data)	Budget	-.015	.918
Having, or not having, an Internet access policy results in different Access	Have an Internet policy?	Questionnaire VII 2 (Internet Policy)	-.015	.930
The better staffing in general the more Access	The only variable in Staffing	Staffing	-.017	.963
Experience of librarians in public education	Librarians avg. year experience	Core data	-.017	.969

makes difference in Access	in public education	(Staffing / Qualification)		

Hypothesis	Elements (variables)	Category of Element	Result	
			Adjstd R^2	p-value
The budget on other than library equipment and materials has an influence on Access	Budget on other than equipment and material	Core (Budget)	-.020	.999

APPENDIX FIVE

Appendix 5. 2002 Questionnaire of School Library Media Centers in Missouri

MISSOURI PUBLIC SCHOOL LIBRARY QUESTIONNAIRE

Please complete this questionnaire for each facility for which you were responsible preferably by November 2, 2002. We must have the completed questionnaire by November 11, 2002. If you have any questions or were unsure how to respond to a specific question, please contact Randy Maginn by phone at (866) 364-0828 or e-mail at randall@qresources.com.

I. IDENTIFYING INFORMATION

Please identify your school by building name, district, and level. Provide contact information for the individual who has primary responsibility for completing this questionnaire.

1. Name of respondent: _____

2. School Building Name: _____

3. District Name: _____

4. Phone Number: _____ Fax: _____

5. Email of Contact Respondent: _____

6. Library Level: (**SELECT ONE ONLY**)

   O Elementary
   O Middle/Junior High
   O High School
   O Combined: Elementary-Middle/Junior High
   O Combined: Middle/Junior High and High School
   O Combined: Elementary-Middle/Junior High-High School

7. Grade levels: (**CIRCLE ALL THAT APPLY**)

   K 1 2 3 4 5 6 7 8 9 10 11 12

8. How long have you been a certificated librarian?

   □ Less than 3 years
   □ 3 to 5 years
   □ 6 to 10 years
   □ More than 10 years

9. Are you responsible for any other school building libraries?

   □ Yes How many _____ What was the other school's name?_____
   □ No

II. LIBRARY MANAGEMENT

1. Does the school library program receive a budget?

□ Yes □ No

2. If yes, do you prepare and submit a budget request to your school administration?

□ Yes □ No

3. Please list your total budget for the last three school years?

	Total Budget
2001-2002	$_____
2000-2001	$_____
1999-2000	$_____

4a. Would you say that these budgets have been stable or fluctuating?

□ Stable, why? _____

□ Fluctuating, why? _____

4. Is there on-going communication between your library staff and your local public library?

□ Yes □ No

□ N/A due to no public library in the area

6. Does your school library program have an active advisory committee?

□ Yes □ No

7. Does your library have a school board approved copyright policy?

□ Yes □ No

8. Does your library have a school board approved collection development policy?

□ Yes □ No **(**SKIP TO Q9**)**

8a. If yes, did your collection development policy address**: (ANSWER YES OR NO TO EACH)**

	Yes	**No**
Materials selection policy	□	□
Weeding policy	□	□
Reconsideration of challenged materials	□	□

9. Do you have a library policy and procedures manual?

□ Yes □ No

10. Do you have a library mission statement and defined goals and objectives?

□ Yes □ No

11. Does your school library have a Summer Reading Program?

□ Yes □ No

12. Does your library or school work cooperatively with your local public library to promote student participation in a summer reading club at a local public library?

□ Yes □ No □ N/A due to no public library in the area

13. Are you responsible for coordinating **distance learning**? That was, were any lessons for students and staff development for teachers or librarians taught via television, satellite or a computer network handled or coordinated through the library?

□ Yes □ No

14. Does your district have a district library or media coordinator? (**SELECT ONE ONLY**)

O Yes, full-time
O Yes, part-time
O No district library coordinator

III. LIBRARY STAFF

1. Please report the level of staffing for your library, by staff category, full-time or part-time, number of persons in each category (adding part-time and full-time persons for each category), and the total number of personnel hours in a typical week for each staff category. Do not report more than 40 hours per week per person. Count each person only once.

For example, if you have 3 paid professional staff, one was full-time working 40 hours a week and two were part-time working 20 hours a week each, record "1" in the Full-time column, "2" in the Part-time column; "3" in the "Number of Persons" column, and "80" (adding 40+20+20) in the "Total Number of Personnel Hours per Week" column. PLEASE ROUND TO THE NEAREST WHOLE HOUR.

Library Staff Categories	**Number who were Full-time**	**Average number of years in the school**	**Number who were Part-time**	**Average number of years in the school**	**Total Number of Persons (head count)**	**Total Number of Personnel Hours per Week**
Paid library aides or clerical staff						
Adult volunteers (per typical week)						
Student volunteers (per typical week)						
Total (for Volunteers)						

2. Please record in the table below the number of paid staff in your library by level of education and credentials and by the hours they work in a typical week.

Do not report more than 40 hours per week per person. Count each person only once. .

PLEASE ROUND TO THE NEAREST WHOLE HOUR.

Highest Education and Certification of Paid Library Staff	**Number of Persons**	**Total Number of Person Hours per Week**
Master's degree or higher with teacher and library science certification		
Master's degree with teacher certification or other state credentials		
Master's degree without teacher certification or other state credentials		
Bachelor's degree with teacher and library science certification		
Bachelor's degree with teacher certification		
Bachelor's degree without teacher certification		
Less than Bachelor's degree		
TOTAL (for Paid Staff)		

3. Do the certificated librarians and /or clerical staff have extended contracts (both before and after school)?

O No
O 1-3 days
O 4-5 days
O 6-10 days
O 11 or more days

What types of activities take place during that time?

_____

_____

IV. SERVICE HOURS PER TYPICAL WEEK

1. Please record the typical number of hours per week that this school library was open for use. . **PLEASE ROUND TO THE NEAREST WHOLE HOUR.**

Library Hours	**Hours per Typical Week**	
# Hours library was open per typical week **during** school hours		
# Hours library was **closed** per typical week **during** school hours		**Why was it closed?**
# Hours library was open per typical week **before** school hours		
# Hours library was open per typical week after school hours		
# Hours library was open per typical week **in the summer**		

2. Would you describe the most typical student time in the library as:
   - ☐ Structured
   - ☐ Non-Structured

3. How would you describe the most typical student activity in the library?
   - O Study Hall
   - O Research
   - O Reading
   - O Other _____

4. Can students access the library information whenever they need to?
   - ☐ Yes, How? _____
   - ☐ No, Why? _____

V. STAFF ACTIVITIES PER TYPICAL WEEK

1. Library staff engages in a wide variety of activities each week. Please record (estimating, if necessary) the number of hours spent on each activity in a typical week by your paid staff.

If library staff did not engage in some activities weekly, please estimate the number of hours spent on that activity in a typical month and divide by four or estimate for a year and divide by the number of weeks per year the library was open. . PLEASE ROUND TO THE NEAREST WHOLE HOUR.

Activities Performed by Paid Library Staff	Number of Personnel Hours per Typical Week
Learning and Teaching	
Planning instructional units with teachers	
Teaching cooperatively with teachers	
Providing staff development (in-service training) to teachers or other school staff	
Working one-to-one with students	
Meetings with building or district committees/teams/task forces on the district curriculum	
Meetings with building or district committees/teams/task forces on school improvement and standards	
Information Access and Delivery	
Performing basic library activities (i.e. checking in and out, re-shelving, processing, retrieving)	
Identifying materials for instructional units developed by teachers	
Providing information skills instruction (i.e. citations, copyright, critical thinking, evaluation of online sources) to individuals or groups	
Drawing in resources from other libraries in the district	
Drawing in resources from libraries in the community	
Providing reading incentive activities (i.e. book talks, story times, reader's advisory services, author visits)	
Program Administration	
Managing library technology (computers, computer network, automation)	
Administering electronic reading programs such as Accelerated Reader	
Evaluating the effectiveness of the program and its collection	
Informing teachers, students, and administrators of new materials, equipment and/or services	
Managing inter-library loans	
Meeting with the principal	
Attending faculty or staff meetings	
Collaboration	
Discussing library activities, instruction, and/or incentives with the community library	
Working with teachers and students to select the collection	
Communicating with building and district library staffs	
Meeting with building and district library staff	
Leadership	
Attending local/regional library association meetings	
Serving on a MASL committee or in a leadership role	
Attending continuing education training	
Applying for awards or attending recognition events	
Preparing and/or presenting to the district school board	
Getting certified	

2. How successful would you say you have been at establishing the integration of information literacy skills across the curriculum?
   - O Very Successful
   - O Successful
   - O Neither Successful nor Unsuccessful
   - O Unsuccessful
   - O Very Unsuccessful

3. How supportive was the school principal of the library program?
   - O Very Supportive
   - O Supportive
   - O Neither Supportive nor Unsupportive
   - O Unsupportive
   - O Very Unsupportive

VI. LIBRARY/LOAN USE PER TYPICAL WEEK

1. Please record information in the table below for each of the types of library use in a typical week.

If these figures must be estimated and it was easier to estimate them for a month or year, please do so. If you estimate for a month, please divide by four. If you estimate for a year, please divide by the number of weeks your library was open annually.

Library Use in a Typical Week	**Number**				
	Students	Teachers	Administrators	Parents	Other
Number of scheduled and unscheduled visits to the school library by **individuals** (students, teachers, administrators, parents, other)					
Number of scheduled and unscheduled visits to the school library by **classes or other groups** (groups of teachers, administrators, parents, or others)					
Number of scheduled or unscheduled information skills instruction contacts with **individuals** (students, teachers, administrators, parents, other)					
Number of scheduled or unscheduled information skills instruction contacts with **classes or groups** (groups of teachers, administrators, parents, or others)					
Total number of books and other materials **checked out** during the most recent full week					
Number of materials **used in the library** (estimate based on re-shelving count)					
Number of loans provided by library to other libraries in district					

2. Please record information in the table below for each of the types of library loans in a typical week.

If these figures must be estimated and it was easier to estimate them for a month or year, please do so. If you estimate for a month, please divide by four. If you estimate for a year, please divide by the number of weeks your library was open annually.

Loans in a Typical Week	**Number**
Number of loans received by library **from** other libraries in the district	
Number of loans provided by library **to** other libraries outside the district	
Number of loans received by library **from** other libraries outside the district	

3. In a typical week, what percent of the classes that visit the library were:

Flexibly scheduled (e.g. scheduled for varying time periods according to need): _____%

Rigidly scheduled (e.g. scheduled for previously specified times): _____%

VII. LIBRARY TECHNOLOGY

1. Does your library have?

	Yes	**No**
An automated district-wide catalog?	□	□
An automated catalog accessible through the Internet?	□	□
Capability to allow the school building access to the online catalog and any other school library databases	□	□
Access to central library services	□	□
A telephone	□	□
A fax machine	□	□
A CD ROM server	□	□
A video projector	□	□
A digital camera	□	□
A satellite dish	□	□
One or more laptops	□	□

2. Does your school have a board adopted Internet access policy or Acceptable Use Policy (AUP)?

□ Yes □ No

3. Please describe your library's conditions/restrictions of student Internet access. (**SELECT ALL THAT APPLY**)

O No restrictions
O With parental permission and/or acceptable use agreement
O Restricted for grades: (**SPECIFY**) _____
O Other restrictions: _____

VIII. LIBRARY COLLECTION

1. Does your library subscribe to any online licensed services other than MOREnet resources?

	Yes	No
Online periodical services (e.g. BigChalk, H.W. Wilson)?	□	□
Online resources/services other than periodical (e.g. Newsbank)	□	□
CD ROM services (e.g. SIRS, Newsbank)?	□	□
Other electronic full text services (e.g. encyclopedias)?	□	□

2. Are any of your licensed online databases accessible from teachers' and students' home computers?

	Yes	No
Teachers	□	□
Students	□	□

3. Do libraries in your district participate in some system for the evaluation of print and non-print library resources?

□ Yes □ No

4. Which of the following titles (in print or electronic version) were available in your school library? (**SELECT ALL THAT APPLY AND RECORD COPYRIGHT DATE**)

		Copyright Date
O	Elementary School Library Collection	_____
O	Children's Catalog	_____
O	Junior High School Catalog	_____
O	High School Catalog	_____

5. Please record information on all your holdings (in or not in circulation) available for use by teachers and/or students

Collection	Number
Encyclopedias and reference titles on CD ROM or laser disc	
Computer software packages for use in school library by students	

6. How many volumes did you purchase for the library in the 2001-2002 school year in total and for each of the following Dewey decimal categories?

Volumes Purchased in School Year 2001-2002	Number
Total number of volumes purchased	
616/Medicine and health	
629.4 Space	
320/Government	

7. Which of the following selection tools do you regularly use? (**CHECK ALL THAT APPLY)**

O Booklist
O Hornbook
O School Library Journal
O Publisher's Catalog
O Cooperative Children's Book Center publications
O Other _____

THANK YOU for completing the questionnaire!

If you have any questions please contact Randy Maginn by phone at (866) 364-0828 or e-mail at rmaginn@rq2.com